



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,796	11/13/2003	Diederik van Batenburg	2002-IP-007282 30545.56	4250

7590

10/05/2005

Robert A. Kent
Halliburton Energy Service, Inc.
2600 S. 2nd Street
P.O. Box 1431
Duncan, OK 73536

EXAMINER

RICHARD, CHARLES R

ART UNIT

PAPER NUMBER

1712

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/713,796

Applicant(s)

VAN BATENBURG ET AL.

Examiner

C. R. Richard

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11-13-2003.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

1. The Examiner here sets forth the most reasonable interpretation of some key terms used in the claims, so that Applicant may better understand the bases for the rejections that follow. Considering the claims and the specification together, the phrases "liquid gel concentrate" and "unhydrated hydratable polymer" (see claims 1 and 11 for example), do not appear to mean what one might understand from the words of these phrases taken literally. "Liquid gel concentrate" will be taken to refer to a concentrate that when diluted with water forms a gel or further gels. "Unhydrated hydratable polymer" will be taken to refer to a polymer that may be hydrated under the right conditions, but is not fully hydrated at least at some point after formation of the concentrate; a polymer in (a) solution that gels or further gels upon dilution in water would not be considered to have been fully hydrated before such dilution.

Claim Objections

2. Claim 13 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 11 from which claim 13 directly depends states that the formate solution is "an aqueous formate solution", so it must comprise water. Thus, the sole limitation added by claim 13, "wherein the formate solution comprises water" does nothing to further limit claim 11.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 11-14, 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Burdick et al. in US Patent 5,228,909. Burdick teaches sodium formate fluidized polymer suspensions.

Burdick discloses results for 15% hydroxyethyl cellulose in 20, 25 and 30% aqueous sodium formate solutions (see column 1, line 60 to column 2, line 40, especially the tables). The 20 and 25% formate solutions gel, and the 30% formate solution produces a fluid suspension (see second table in column 2); this suspension in 30% formate is a liquid gel concentrate (see above for claim phrase interpretations). Note that from this data, one may easily infer that such a 30% formate based suspension may be diluted with water to provide a hydroxyethyl cellulose gel and also that the formate is a hydration inhibitor.

The third table in column 2 shows that the suspensions may contain (at least) up to 35% sodium formate and 25% polymer, along with xanthan gum. The xanthan is used as a suspending agent (see column 2, lines 53-56).

5. Claims 11-14 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Korzilius et al. in US Patent 6,239,081. Korzilius teaches water based drilling fluids.

The cited reference discloses water based drilling fluids that may comprise sodium, potassium and cesium formates (especially potassium formate) and a boron compound (such as boric acid or a borate among others) (see column 1, lines 45-67). Preferably the formate will be at 30 to 100% saturation (see column 2, lines 20-23). Various cellulose derivative may be included (see column 2, lines 35-60); 7 weight percent polymer solutions are described (see column 3, lines 8-11).

Solutions of cellulose derivatives, synthetic polymers or starch in 30, 50 or 70% potassium formate solutions, with or without boron/potassium carbonate are shown in tables in the Examples. Potassium carbonate is a base and a pH adjuster.

Presence of high levels of potassium formate or other formates would mean the polymer was at least partially unhydrated, with or without boron or the carbonate.

6. Claims 11-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith in US Patent 6,454,005. Smith teaches treatment fluids.

The aqueous fluids of Smith may contain up to 50 weight percent potassium formate and guar or a guar derivative such as hydroxypropyl or carboxymethyl hydroxypropyl guar (see column 2, lines 15-39). Presence of high levels of potassium formate would mean the guar is at least partially unhydrated.

7. Claims 1-4, 9, 11-15 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Vollmer in US Patent Application Publication 2005/0101491. Vollmer teaches suspensions of cellulose in alkali formate brines.

In particular, Vollmer teaches fluidized suspensions of cellulosic polymers in alkali formate solutions – preferably 40 to 75 weight percent potassium or cesium formate (see Abstract). The formate solution serves as a carrier allowing the cellulosic to be added to brines to thicken them, allowing for hydration without the formation of fish eyes (see Abstract) – addition to a brine at least effectively dilutes the cellulosic suspension (a liquid gel concentrate as opposed to a gel) with water. The formate solutions are aqueous (see paragraph 17). A suspending agent such as guar may be used (see paragraph 21).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 1712

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 11-14, 16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over over Clarke-Sturman et al. in US Patent 4,900,457 in view of physical property data in Vollmer in US Patent Application Publication 2005/0101491. Clarke teaches aqueous polysaccharide compositions and methods of using them in drilling.

Clarke's aqueous compositions may comprise a water soluble polysaccharide and 5 to 80 or 120 %w/v of a formate salt (see Abstract and column 2, lines 1-9). The cation of the salt may be sodium, potassium or cesium, with sodium and potassium among the preferred cations (see column 2, lines 11-17). The polysaccharide may be among others a cellulose derivative such as hydroxyethyl cellulose (see column 2, lines 17-18); another cellulose derivative mentioned is carboxymethylhydroxyethyl cellulose (see column 1, lines 4-15). A pH adjuster like sodium hydroxide or carbonate may be used (see column 2, lines 52-54).

Note that 1% salt solution w/v means 10 g salt /liter of solution (see column 2, lines 34-36). Using the data of Tables I, II & III in the Vollmer reference cited above,

Art Unit: 1712

saturated sodium formate is about 56%w/v or about 43 weight percent and has a density of about 10.9 ppg; 80%w/v potassium formate is about 57.2 weight percent and has a density of 11.68 ppg, while 120%w/v potassium formate is right at 76 weight percent which is about 75 weight percent and has a density of 13.17 ppg. Note this rejection is not actually based on the Vollmer reference; Vollmer is merely a convenient source of physical property data useful in unit conversion needed here.

Note that the presence of such high levels of formate salts would mean the polymer is at least partially unhydrated.

Although Clarke teaches all of the limitations of the rejected claims in proper context, it does not give a specific example where a polymer and an appropriate formate solution are combined. However, from the teachings of Clarke, it would have been obvious to one of ordinary skill in the art to make such combination, thus rendering the rejected claims obvious.

10. Claims 1-4, 9-10, 11-15 and 20-21 are rejected under 35 U.S.C. 103(a) as being obvious over Chesser et al. in US Patent 6,933,262 in view of physical property data in Vollmer in US Patent Application Publication 2005/0101491.

Chesser discloses a precursor polymer dispersion in a brine for addition to another brine for use in drilling and completion operations (see Abstract) – note this is effectively a dilution of the dispersion in water. Example II shows that the second brine may have a lower percentage salt than the first in any case.

The salt in the first brine may be sodium, potassium or cesium formate (see column 2, lines 47-60). The polymer may be a cellulose or a cellulose derivative, wellan or guar gum (see column 3, lines 1-12). The initial brine is preferably at a density of 11-13 ppg (see column 3, lines 40-50). Using data in Tables I, II and III of the Vollmer reference cited above (used here merely for physical property data), 11 ppg sodium formate would be saturated and about 43 weight percent sodium formate, 11 ppg potassium formate is about 47.5 weight percent and 13 ppg potassium formate would be about 73.8 weight percent.

Note that the presence of such high levels of formate salts in the first brine would mean the polymer is at least partially unhydrated there. Chesser specifically teaches that hydration of these polymer is inhibited in brines (see column 1, lines 45-52).

As to claims 9-10 and 20-21, the following quotation from a case decided by the Court of Customs and Patent Appeals stating a legal rule (hereinafter referred to as the rule of Kerkhoven) is relevant.

"It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose." In re Kerkhoven, 205 USPQ 1069, 1072 (CCPA 1980).

That is, it would be obvious to use welan gum in combination with guar or one of the other polymers taught by Chesser; Chesser teaches these as having the same purpose (see above).

Chesser teaches all of the (other) limitations of the rejected claims in proper context, but it does not give a specific example where a polymer and an appropriate formate solution are combined. However, from the teachings of Chesser, it would have

Art Unit: 1712

been obvious to one of ordinary skill in the art to make such combination. The rejected claims are thus rendered obvious.

11. Claims 1-8 and 11-19 are rejected under 35 U.S.C. 103(a) as being obvious over Briscoe in US Patent 4,336,145 in view of Chesser et al. in US Patent 6,933,262. Briscoe teaches liquid gel concentrates; Chesser has been discussed in detail above.

Briscoe teaches a liquid gel concentrate comprising water, a hydratable polymer which yields viscosity upon hydration, and a reversible hydration inhibitor; the concentrate may be diluted with additional water to form a high viscosity treating fluid (see Abstract). Useful polymers include polysaccharides such as guar and derivatives of guar (see column 2, lines 12-26). Inhibitors include sodium tetraborate and sodium hydroxide (see column 3, line 60 to column 4, line 8). The tetraborate is taught specifically in combination with hydroxypropyl guar (see column 5, lines 1-5).

Briscoe teaches all of the limitations of the rejected claims, except for the use of formate solutions. As stated above, Chesser teaches that brines inhibit polymer hydration and teaches formate brines in a context very similar to that of Briscoe. Applying the rule from the Kerkhoven case cited above, it would have been obvious for one of ordinary skill in the art to combine the formate solutions of Chesser with the Briscoe concentrates containing any or all of the inhibitors taught by Briscoe itself. The rejected claims are thus rendered obvious.

Conclusion

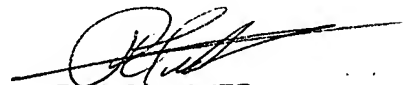
12. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure: US Patents 4,466,890 and 5,785,747.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. R. Richard whose telephone number is 571-272-8502. The examiner can normally be reached on M-Th, 8am-6pm and alternate Fridays, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.R. Richard


PHILIP TUCKER
PRIMARY EXAMINER
ART UNIT 1712